AquaSift V3, Firmware Version 00.12

Main Menu

Binary Command	ASCII Command	Menu Item	Default Value
0x01	1	Transmission Mode (A)SCII, (M)atLab, (B)inary	M
0x02	2	Number of Electrodes (2 or 3)	3
0x03	3	Sample Output Rate ms (1 to 1000)	2
	4	Transimpedance Amplifier Menu	
	5	Deposition Menu	
	6	Linear Sweep Menu	
	7	Differential Pulse Menu	
	8	Arbitrary Waveform Menu	
	9	Low-pass Filter Menu	
0x0A	10	Get Settings	
		Firmware Version: xx.xx	
		Product ID: AQS1	
0x4C, 0x6C	L, l	Start Linear Sweep Test	
0x44, 0x64	D, d	Start Differential Pulse Test	
0x41, 0x61	A, a	Start Arbitrary Waveform Test	
0x58, 0x78	X, x	Abort Test	

NOTE: Sending T or t (0x54 or 0x74) will return a single character indicating the current transmission mode (A, M or B).

TIA Menu

Binary Command	ASCII Command	Menu Item	Default Value
0x0B	11	TIA Gain Resistor	4
		1. 100	
		2. 1k	
		3. 5.1k	
		4. 10k	
		5. 51k	
		6. 100k	

Deposition Menu

Binary Command	ASCII Command	Menu Item	Default Value
0x0C	12	Enable Deposition (Y/N)	Y
0x0D	13	Deposition Time ms (1 to 800000)	60000
0x0E	14	Deposition Voltage mV (-1650 to 1650)	-500
0x0F	15	Quiet Time ms (0 to 800000)	0
0x10	16	Record Deposition Sequence (Y/N)	Y

Linear Sweep Menu

Binary Command	ASCII Command	Menu Item	Default Value
0x11	17	Start Voltage mV (-1650 to 1650)	-500
0x12	18	End Voltage mV (-1650 to 1650)	500
0x13	19	Sweep Rate mV/s (1 to 4000)	10
0x14	20	Cyclic (Y/N)	N
0x15	21	Number of Cycles (1 to 100)	5

Differential Pulse Menu

Binary Command	ASCII Command	Menu Item	Default Value
0x16	22	Start Voltage mV (-1650 to 1650)	-500
0x17	23	End Voltage mV (-1650 to 1650)	500
0x18	24	Increment mV (0 to 1650)	50
0x19	25	Pulse Voltage mV (-1650 to 1650)	100
0x1A	26	Pre-pulse Time ms (1 to 10000)	150
0x1B	27	Pulse Time ms (1 to 10000)	20
0x1C	28	Sampling Window Width ms (1 to 10000)	1

Arbitrary Waveform Menu

Binary Command	ASCII Command	Menu Item	Default Value
0x1D	29	Append Entry (StartmV StopmV RatemV/s)	
0x1E	30	Replace Entry (Entry# StartmV StopmV RatemV/s)	
0x1F	31	Delete Last Entry	
0x20	32	Delete All Entries	
0x21	33	Get Stored Values	
		Number of Stored Entries (Up to 20000): XXXXX	
		StartmV: -1650 to 1650	
		EndmV: -1650 to 1650	
		RatemV/s: 1 to 12000	

Low Pass Filter Menu

Binary Command	ASCII Command	Menu Item	Default Value
0x22	34	Selected Filter (0 to 7)	0
		Cutoff Frequency	
		0. Off	
		1. 1Hz	
		2. 5Hz	
		3. 10Hz	
		4. 50Hz	
		5. 100Hz	
		6. 150Hz	
		7. 200Hz	

Binary and ASCII Stream Control Words

Binary Code	ASCII Code	Counter Word	Description
0x8000	32768	No	Start Deposition
0x8100	33024	No	Start Quiet Time
0x8200	33280	Yes	Start Linear Sweep Segment
0x8400	33792	Yes	Start Differential Pulse, Pre-pulse
0x8500	34048	Yes	Start Differential Pulse, Pulse
0x8600	34304	Yes	Start Arbitrary Waveform Segment
0xF000	61440	No	Test Aborted
0xFF00	65280	No	End Block
0xFFF0	65520	No	End Test

The counter word column indicates that the control word will be followed by another word that represents the current count. Multiple blocks of data can be generated during testing. The counter indicates which block is currently being outputted.

Binary Error Codes

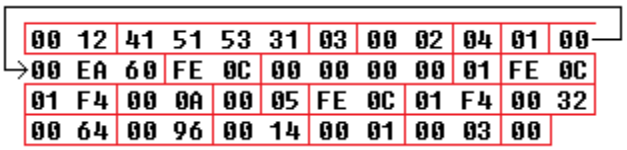
Error Code	Description
0x00	No Error
0x01	Value Low
0x02	Value High
0x03	Invalid Parameter
0x04	Array Overflow
0x05	Flash Memory Full
0x06	Invalid Command
0x07	Differential Pulse Voltage Out of Range
0x08	Differential Pulse Sampling Window Too Wide

Serial Communication Configuration

Parameter	Value
Baud Rate	230400
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

Binary Settings

When the single byte 0x0A is sent to the device in binary mode, a block of data is sent back that contains all the configuration data. Below is a sample block divided into the different data segments. NOTE: The binary data is in hexadecimal format.



Segment	Number of Bytes	Description	Valid Range (Decimal)
1	2	Firmware Revision	Any
2	4	Product ID	Any
3	1	Number of electrodes	2 or 3
4	2	Output data rate	1 to 1000
5	1	TIA Gain Resistor	1 to 6
6	1	Enable Deposition	0 or 1 (No or Yes)
7	4	Deposition Time	1 to 800000
8	2	Deposition Voltage	-1650 to 1650
9	4	Quiet Time	1 to 800000
10	1	Record Deposition Sequence	0 or 1 (No or Yes)
11	2	Linear Sweep-Start Voltage	-1650 to 1650
12	2	Linear Sweep-End Voltage	-1650 to 1650
13	2	Linear Sweep-Rate	1 to 4000
14	1	Linear Sweep-Cyclic	0 or 1 (No or Yes)
15	1	Linear Sweep-Number of Cycles	1 to 100
16	2	Dif Pulse-Start Voltage	-1650 to 1650
17	2	Dif Pulse-End Voltage	-1650 to 1650
18	2	Dif Pulse-Increment	1 to 1650
19	2	Dif Pulse-Pulse Voltage	-1650 to 1650
20	2	Dif Pulse-Pre-pulse Time	1 to 10000
21	2	Dif Pulse-Pulse Time	1 to 10000
22	2	Dif Pulse-Sampling Window Width	1 to 10000
23	2	Arbitrary Waveform Stored Values	0 to 20000
24	1	Selected Low-pass Filter	0 to 7